

## Listing of Claims

The following listing of claims is intended to supercede all previously filed listings of claims. Changes are shown with deletions in ~~striketrough~~ and additions underlined.

Kindly enter the following amendments to the claims:

**Claim 1 (original).** A method for compressing and decompressing digital terrain elevation data, images, or graphs in at least two dimensions, including the steps of:

computing a numerical approximation to at least one of the slope, curvature, and/or another predetermined geometric feature, and storing the numerical approximation together with data values prescribed at certain predetermined locations:

applying a suitable compression technique to the geometric feature; and  
retrieving the image.

**Claim 2 (original).** The method of claim 1, wherein the retrieving step is carried out by numerically solving for the viscosity solution of the Eikonal Equation, using a source term derived from the compressed slope.

**Claim 3 (original).** The method of claim 1, wherein the retrieving step is carried out by numerically solving for the viscosity solution of the Eikonal Equation, using a source term derived from the compressed slope of the slope, repeated N times, with N taken from the degree of the differential operator associated with the geometric feature.

**Claim 4 (original).** The method of claim 1, wherein the retrieving step is carried out by numerically solving for the viscosity solution of the Eikonal equation, first using a source term

derived from the compressed slope, then using a source term derived from the error in the compressed slope, and then adding the resulting solutions.

**Claim 5 (original).** The method of claim 1, wherein the retrieving step is carried out by numerically solving an elliptic differential equation using a source term derived from a compressed version of the elliptic operator applied to the image, where appropriate boundary conditions are stored and used.

**Claim 6 (original).** A system for compressing and decompressing surface data, including:

a gradient module configured to receive the surface data and generate a gradient signal;

a compression module configured to receive the gradient signal and generate a compressed signal; and

a reconstruction module configured to decompress the compressed signal to recover the gradient signal as a reconstructed signal.

**Claim 7 (original).** The system of claim 6, further including a module configured to store the compressed signal.

**Claim 8 (original).** The system of claim 6, further including a module configured to transmit the compressed signal.

**Claim 9 (original).** The system of claim 6, configured to operate in cooperation with a processor-based computer system.

**Claim 10 (original).** The system of claim 6, wherein the surface data comprises digital terrain elevation data.

**Claim 11 (original).** The system of claim 6, further including an input/output channel in communication with avionics equipment, and configured to provide elevation data to the avionics equipment generated from the reconstructed signal.

**Claim 12 (original).** The system of claim 6, further including an integration module configured to generate reconstructed surface data from the reconstructed signal.

**Claim 13 (original).** A system for compressing and decompressing surface data, including:

    a first gradient module configured to receive the surface data and generate a first gradient signal;

    a second gradient module configured to receive the surface data and generate a second gradient signal;

    a compression module configured to receive the second gradient signal and generate a compressed signal; and

    a reconstruction module configured to decompress the compressed signal to recover the second gradient signal as a reconstructed signal.

**Claim 14 (original).** The system of claim 13, further including an integration module to generate reconstructed surface data from the reconstructed signal.

**Claim 15 (original).** The system of claim 13, further including a module configured to store the compressed signal.

**Claim 16 (original).** The system of claim 13, further including a module configured to transmit the compressed signal.

**Claim 17 (original).** The system of claim 13, configured to operate in cooperation with a processor-based computer system.

**Claim 18 (original).** The system of claim 13, wherein the surface data comprises digital terrain elevation data.

**Claim 19 (original).** The system of claim 13, further including an input/output channel in communication with, avionics equipment, and configured to provide elevation data to the avionics equipment generated from the reconstructed signal.

**Claim 20 (original).** A method for compressing and reconstructing a signal of at least one dimension, including the steps of:

generating a gradient of the signal;

compressing the gradient of the signal to generate a compressed signal; and

decompressing the compressed signal to generate a reconstructed signal.

**Claim 21 (original).** The method of claim 20, further including the step of generating an integrated signal from the reconstructed signal.

**Claim 22 (original).** The method of claim 21, wherein at least one of the steps of generating the gradient of the signal and generating the integrated signal is carried out by a numerical process.

**Claim 23 (original).** The method of claim 22, wherein at least one of the gradient and the integrated signal is generated to within a predetermined level of accuracy.

**Claim 24 (original).** The method of claim 21, wherein at least one of the steps of generating the gradient of the signal and generating the integrated signal is carried out by analytically.

**Claim 25 (original).** The method of claim 24, wherein at least one of the gradient and the integrated signal is generated to within a predetermined level of accuracy.

**Claim 26 (original).** The method of claim 20, wherein the signal relates to terrain data.

**Claim 27 (original).** The method of claim 26, further including the step of transmitting the reconstructed signal as input to avionics equipment for providing relative elevation data.

**Claim 28 (original).** A method for compressing and reconstructing a signal of at least one dimension, including the steps of

generating a first gradient of the signal;

generating a second gradient from the first gradient;

compressing the second gradient to generate a compressed signal; and

decompressing the compressed signal to generate a reconstructed second gradient signal.

**Claim 29 (original).** The method of claim 28, further including the step of generating an integrated signal from the reconstructed second gradient signal.

**Claim 30 (currently amended).** The method of claim 29~~x~~, further including the step of transmitting the integrated signal as input to avionics equipment for providing relative elevation data.